

Customer No.: 31561
Docket No.: 11869-US-PA
Application No.: 10/707,296

To the Claims:

Please amend the claims as follows.

Claim 1. (currently amended) A circuit for enhancing motion picture quality,
5 comprising:

a first dual-port buffer, for receiving and temporarily storing a first frame date
data, and first-in-first-out outputting said first frame data;

a second dual-port buffer, for receiving and temporarily storing a second frame
datedata, and first-in-first-out outputting said second frame data; said first frame data
10 being shown in a motion picture after said second frame data;

a frame memory, for storing a motion picture data;

a multiplexer unit, coupled to said first dual-port buffer, said second dual-port
buffer, and said frame memory, for selecting and transmitting one of said outputted said
first frame data to said frame memory and said outputted said second frame data from
15 said frame memory to said second dual-port buffer; and

a signal-converter~~signal-converter~~, for obtaining~~receiving~~ said first frame data
and said second frame data and comparing said first frame data and said second frame
data to generate a compensation data [[to]]and output a third frame data in response to
said first frame data and said second frame data corresponding to said first frame data.

20 Claim 2. (currently amended) The circuit of claim 1, further comprising:

a first data latch, for receiving a fourth frame data and outputting said first frame
data, the number of bits of said first frame data is larger than the number of bits of said
fourth frame data;

a second data latch, for receiving ~~a-fifth~~said second frame data and outputting

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said-second frame data, the number of bits of said second frame data is larger than the number of bits of said fifth frame data;

wherein said signal-converter~~signal-converter~~ is for obtaining said compensation data to output said third frame data in response to said fourth frame data and said fifth frame data corresponding to said second frame data.

Claim 3. (currently amended) The circuit of claim 2, further comprising a nonlinear quantizer receiving a sixth frame data and quantizing said sixth frame data by using a nonlinear quantization method to output said fourth frame data, said signal converter~~signal-converter~~ receiving said sixth frame data and compensating said sixth frame data based on said compensation data to obtain said third frame data.

Claim 4. (currently amended) The circuit of claim 3, wherein said signal converter~~signal-converter~~ comprises:

a motion picture enhancing unit, for simultaneously receiving said fourth frame data and said fifth frame data and comparing said fourth frame data and said fifth frame data to generate said compensation data based on the difference between said fourth frame data and said fifth frame data; and

a data processing unit, for simultaneously receiving said sixth frame data and said compensation data corresponding to said sixth frame data, and compensating said sixth frame data based on said compensation data to obtain said third frame data.

Claim 5. (currently amended) The circuit of claim 2, wherein the number of bits of said first frame data are integral of the number of bits of said fourth frame data, and the number of bits of said second frame data ~~are~~ is said integral of the number of bits of said fifth frame data.

Claim 6. (original) The circuit of claim 1, wherein said circuit is applied to a

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liquid crystal display.

Claim 7. (currently amended) A circuit for enhancing motion picture quality, comprising:

a nonlinear quantizer receiving a first frame data and quantizing said first frame
5 data by using a nonlinear quantization method to output a second frame data;

a frame memory module, coupled to said nonlinear quantizer, for receiving said second frame data and outputting a third frame data corresponding to said second frame data, said second frame data being shown in a motion picture after said third frame data;

and

10 a ~~signal converter~~signal-converter, in response to said second frame data and said third frame data corresponding to said second frame data, for obtaining a compensation data to compensate said first frame data for outputting a fourth frame data.

Claim 8. (currently amended) The circuit of claim 7, wherein said frame
15 memory module comprises:

a first dual-port buffer, for receiving and temporarily storing said second frame data, and first-in-first-out outputting said second frame data;

a second dual-port buffer, for receiving and temporarily storing said third frame data, and first-in-first-out outputting said third frame data;

20 a frame memory, for storing a motion picture data; and

a multiplexer unit, coupled to said first dual-port buffer, said second dual-port buffer, and said frame memory, for selecting and transmitting one of said outputted said second frame data to said frame memory and said outputted said third frame data [[to]]from said frame memory to said second dual-port buffer.

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Claim 9. (currently amended) The circuit of claim 8, wherein said signal convertersignal-converter comprises:

a motion picture enhancing unit, for simultaneously receiving said second frame data and said third frame data and comparing said second frame data and said ~~second~~ 5 third frame data to generate said compensation data based on the difference between said second frame data and said third frame data; and

a data processing unit, for simultaneously receiving said first frame data and said compensation data corresponding to said first frame data, and compensating said first frame data based on said compensation data to obtain said fourth frame data.

10 Claim 10. (original) The circuit of claim 8, wherein said circuit is applied to a liquid crystal display.

Claim 11. (currently amended) A method for enhancing motion picture quality, comprising:

providing a first dual-port buffer, a second dual-port buffer, and a frame 15 memory;

using said first dual-port buffer to receive and temporarily store a first frame dateddata, and first-in-first-out outputting said first frame data;

using said second dual-port buffer to receive and temporarily store a second frame dateddata, and first-in-first-out outputting said second frame data; said first frame 20 data being shown in a motion picture after said second frame data;

using said frame memory to store a motion picture data;

multiplexing said motion picture data in said frame memory thereby selecting and transmitting one of said outputted said first frame data to said frame memory and said outputted said second frame data from said frame memory to said second dual-port

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buffer; and

obtaining a compensation data to output a third frame data in response to said first frame data and said second frame data corresponding to said first frame data.

- Claim 12. (currently amended) The method of claim 11, further comprising:
- 5 receiving a fourth frame data and outputting said first frame data, the number of bits of said first frame data is larger than the number of bits of said fourth frame data;
- receiving ~~a-fifth~~ said second frame data and outputting ~~said second~~ said fifth frame data, the number of bits of said second frame data is larger than the number of bits of said fifth frame data;
- 10 wherein said step of outputting said third frame data is performed by obtaining said compensation data in response to said fourth frame data and said fifth frame data corresponding to said second frame data.

- Claim 13. (original) The method of claim 12, further comprising quantizing said sixth frame data by using a nonlinear quantization method to output said fourth frame data, wherein said step of outputting said third frame data further comprises:

- simultaneously receiving said fourth frame data and said fifth frame data and comparing said fourth frame data and said fifth frame data to generate said compensation data based on the difference between said fourth frame data and said fifth frame data; and
- 20 simultaneously receiving said sixth frame data and said compensation data corresponding to said sixth frame data, and compensating said sixth frame data based on said compensation data to obtain said third frame data.

Claim 14. (currently amended) The method of claim 11, further comprising quantizing ~~said~~ fourth frame data by using a nonlinear quantization method to output

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said first frame data, wherein said step of outputting said third frame data further comprises:

simultaneously receiving said first frame data and said second frame data and comparing said first frame data and said second frame data to generate said compensation data based on the difference between said first frame data and said second frame data; and

simultaneously receiving said fourth frame data and said compensation data corresponding to said fourth frame data, and compensating said fourth frame data based on said compensation data to obtain said third frame data.

10 Claim 15. (currently amended) A circuit for enhancing motion picture quality, comprising:

a first dual-port buffer receiving and temporarily storing a first frame [[date]]data, and first-in-first-out outputting said first frame data;

15 a second dual-port buffer, for receiving and temporarily storing a second frame [[date]]data, and first-in-first-out outputting said second frame data; said first frame data being shown in a motion picture after said second frame data;

a frame memory, for storing a motion picture data;

20 a multiplexer unit, coupled to said first dual-port buffer, said second dual-port buffer, and said frame memory, for selecting and transmitting one of said outputted said first frame data to said frame memory and said outputted said second frame data from said frame memory to said second dual-port buffer;

~~a signal converter, in response to said first frame data, a third frame data and said second frame data corresponding to said third frame data, for obtaining a compensation data~~signal-converter, for receiving said first frame data, said second

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frame data and a third frame data to generate a compensation data and to output a fourth frame data and a fifth frame data;

a first data flow switcher, for receiving a sixth frame data and a seventh frame data and transforming said sixth frame data and said seventh frame data ~~into one of said first frame data and said third frame data respectively and said third frame data and said first frame data respectively~~ to output said first frame data and said third frame data, said first data flow switcher outputs one of said first frame data and said third frame data;
and

10 a second data flow switcher, for receiving said fourth frame data and said fifth frame data and transforming said fourth frame data and said fifth frame data ~~into one of said eighth frame data and said ninth frame data respectively and said eighth frame data and said ninth frame data respectively~~ to output an eighth frame data and a ninth frame data, said second data flow switcher outputs one of said eighth frame data and said ninth frame data.

15 Claim 16. (currently amended) The circuit of claim 15, further comprising:

a first data latch, coupled to and between said first data flow switcher and said first dual-port buffer, said first data flow switcher is changed for receiving said sixth frame data and said seventh frame data, and transforming said sixth frame data and said seventh frame data ~~into one of a tenth frame data and said third frame data respectively and said third frame data and said tenth frame data respectively~~ to output a tenth frame data and the third frame data. said first data flow switcher outputs one of said third frame data and said tenth frame data, said first data latch, for receiving said tenth frame data and outputting said first frame data, the number of bits of said first frame data is larger than the number of bits of said tenth frame data;

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a second data latch, coupled to and between said first dual-port buffer and said ~~signal converter~~signal-converter, for receiving said second frame data and outputting an eleventh frame data, the number of bits of said second frame data is larger than the number of bits of said eleventh frame data;

5 wherein said ~~signal converter~~signal-converter, in response to said tenth frame data, said third frame data and said eleventh frame data corresponding to said third frame data, obtains said compensation data to output said fourth frame data and said fifth frame data.

Claim 17. (currently amended) The circuit of claim 16, further comprising:

10 a first nonlinear quantizer, coupled to and between said first data flow switcher and said first data latch, said first data flow switcher is changed for receiving said sixth frame data and said seventh frame data, and transforming said sixth frame data and said seventh frame data ~~into one of a twelfth frame data and said third frame data respectively and said third frame data and said twelfth frame data respectively to output~~
~~a twelfth frame data and the third frame data. said first data flow switcher outputs one of~~
~~said third frame data and said twelfth frame data,~~ said first nonlinear quantizer receiving said twelfth frame data and quantizing said twelfth frame data by using a nonlinear quantization method to output said tenth frame data; and

20 a second nonlinear quantizer, coupled to and between said first data flow switcher and said ~~signal converter~~signal-converter, for receiving said third frame data and quantizing said third frame data by using a nonlinear quantization method to output said thirteenth frame data;

 wherein said ~~signal converter~~signal-converter, in response to said twelfth frame data, said third frame data, and said thirteenth frame data corresponding to said

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eleventh frame data, obtains said compensation data to output said fourth frame data and said fifth frame data.

Claim 18. (currently amended) The circuit of claim 17, wherein said signal converter ~~signal-converter~~ comprises:

5 a motion picture enhancing unit, for simultaneously receiving said thirteenth frame data and said eleventh frame data and comparing said thirteenth frame data and said eleventh frame data to generate said compensation data based on the difference between said thirteenth frame data and said eleventh frame data;

10 a first data processing unit, for simultaneously receiving said twelfth frame data and said compensation data corresponding to said twelfth frame data, and compensating said twelfth frame data based on said compensation data to obtain said fourth frame data; and

15 a second data processing unit, for simultaneously receiving said third frame data and said compensation data corresponding to said third frame data, and compensating said third frame data based on said compensation data to obtain said fifth frame data.

Claim 19. (original) The circuit of claim 16, wherein the number of bits of said first frame data are integral of the number of bits of said tenth frame data, and the number of bits of said second frame data are said integral of the number of bits of said eleventh frame data.

20 Claim 20. (original) The circuit of claim 15, wherein said circuit is applied to a liquid crystal display.

Claim 21. (currently amended) A circuit for enhancing motion picture quality, comprising:

a first nonlinear quantizer, for receiving a first frame data and quantizing said

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first frame data by using a nonlinear quantization method to output a second frame data; a second nonlinear quantizer, for receiving a third frame data and quantizing said third frame data by using a nonlinear quantization method to output a fourth frame data;

5 a frame memory module, coupled to said first nonlinear quantizer, receiving said second frame data and outputting a fifth frame data corresponding to said second frame data, said second frame data being shown in a motion picture after said fifth frame data;
~~a signal converter, in response to said first frame data, said third frame data, said fourth frame data and said fifth frame data corresponding to said fourth frame data, for obtaining a compensation data~~
10 ~~signal-converter, for receiving said first frame data, said third frame data, said fourth frame data and said fifth frame data to generate a compensation data and to output a sixth frame data and a seventh frame data;~~

 a first data flow switcher, for receiving an eighth frame data and a ninth frame data and transforming said eighth frame data and said ninth frame data ~~into one of said first frame data and said third frame data respectively and said third frame data and said first frame data respectively to output the first frame data and the third frame data, said first data flow switcher outputs one of said first frame data and said third frame data;~~
15 and

 a second data flow switcher, for receiving said sixth frame data and said seventh frame data and transforming said sixth frame data and said seventh frame data ~~into one of said tenth frame data and said eleventh frame data respectively and said tenth frame data and said eleventh frame data respectively to output a tenth frame data and a eleventh frame data, said second data flow switcher outputs one of said tenth frame data and said eleventh frame data.~~

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Claim 22. (currently amended) The circuit of claim 21, wherein said frame memory module comprises:

- a first dual-port buffer, for receiving and temporarily storing said second frame [[date]]data, and first-in-first-out outputting said second frame data;
- 5 a second dual-port buffer, for receiving and temporarily storing said fifth frame [[date]]data, and first-in-first-out outputting said fifth frame data;
- a frame memory storing a motion picture data; and
- a multiplexer unit, coupled to said first dual-port buffer, said second dual-port buffer, and said frame memory; for selecting and transmitting one of said outputted said 10 second frame data to said frame memory and said outputted said fifth frame data from said frame memory to said second dual-port buffer.

Claim 23. (currently amended) The circuit of claim 22, wherein said signal convertersignal-converter comprises:

- a motion picture enhancing unit, for simultaneously receiving said fourth frame data and said fifth frame data and comparing said fourth frame data and said fifth frame data to generate said compensation data based on the difference between said fourth frame data and said fifth frame data;
- 15 a first data processing unit, for simultaneously receiving said first frame data and said compensation data corresponding to said first frame data, and compensating said first frame data based on said compensation data to obtain said sixth frame data.; and
- 20 a second data processing unit, for simultaneously receiving said third frame data and said compensation data corresponding to said third frame data, and compensating said third frame data based on said compensation data to obtain said seventh frame data.

Claim 24. (original) The circuit of claim 21, wherein said circuit is applied to a

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liquid crystal display.

Claim 25. (currently amended) A method for enhancing motion picture quality, comprising:

providing a first dual-port buffer, a second dual-port buffer, and a frame memory;

using said first dual-port buffer to receive and temporarily store a first frame [[date]]data, and first-in-first-out outputting said first frame data;

using said second dual-port buffer to receive and temporarily store a second frame [[date]]data, and first-in-first-out outputting said second frame data; said first frame data being shown in a motion picture after said second frame data;

using said frame memory to store a motion picture data;

multiplexing said motion picture data in said frame memory thereby selecting and transmitting one of said outputted said first frame data to said frame memory and said outputted said second frame data from said frame memory to said second dual-port buffer; and

obtaining a compensation data to output a fourth frame data and a fifth frame data, in response to said first frame data, a third frame data, and said second frame data corresponding to said third frame data;

transforming a sixth frame data and a seventh frame data into one of said first frame data and said third frame data respectively and said third frame data and said first frame data respectively, in response to a time sequence; and

transforming said fourth frame data and said fifth frame data into one of an eighth frame data and a ninth frame data respectively and said ninth frame data and said eighth frame data respectively, in response to said time sequence.

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Claim 26. (currently amended) The method of claim 25, further comprising:

said step of transforming said sixth frame data and said seventh frame data into one of said first frame data and said third frame data respectively and said third frame data and said first frame data respectively is changed to a step of transforming said sixth frame data and said seventh frame data to output the third frame data and a tenth frame data, outputting one of said third frame data and said tenth frame data;

receiving [[a]]said tenth frame data and outputting said first frame data, wherein a number of bits of said tenth frame data is larger than a number of bits of said first frame data;

10 receiving a second frame data and outputting an eleventh frame data, wherein a number of bits of said second frame data is larger than a number of bits of said eleventh frame data;

wherein said step of outputting said fourth frame data and said fifth frame data is performed by obtaining said compensation data in response to said third frame data, said 15 tenth frame data, and said eleventh frame data corresponding to said tenth frame data;

wherein said step of transforming said sixth frame data and said seventh frame data into one of said first frame data and said third frame data respectively and said third frame data and said first frame data respectively is changed to a step of transforming said sixth frame data and said seventh frame data into one of said tenth frame data and said third frame data respectively and said third frame data and said tenth frame data respectively.

Claim 27 (currently amended) The method of claim 26, further comprising:

said step of transforming said sixth frame data and said seventh frame data into one of said first frame data and said third frame data respectively and said third frame

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data and said first frame data respectively is changed to a step of transforming said sixth frame data and said seventh frame data to output the third frame data and a twelfth frame data, outputting one of said third frame data and said twelfth frame data;

5 quantizing [[a]]said twelfth frame data and said third frame data by using a nonlinear quantization method to output said tenth frame data and a thirteenth frame data respectively, wherein said step of outputting said fourth frame data and said fifth frame data is performed by obtaining said compensation data in response to said twelfth frame data, said third frame data, and said thirteenth frame data corresponding to said eleventh frame data, and wherein said step of transforming said sixth frame data and
10 said seventh frame data into one of said tenth frame data and said third frame data respectively and said third frame data and said tenth frame data respectively is change
changed to a step of transforming said sixth frame data and said seventh frame data into
one of said twelfth frame data and said third frame data respectively and said third
frame data and said twelfth frame data respectively.

15 Claim 28. (original) The method of claim 27, wherein said step of outputting said fourth frame data and said fifth frame data further comprises:

simultaneously receiving said thirteenth frame data and said eleventh frame data corresponding to said thirteen and comparing said thirteenth frame data and said eleventh frame data to generate said compensation data based on the difference between
20 said thirteenth frame data and said eleventh frame data;

simultaneously receiving said twelfth frame data and said compensation data corresponding to said twelfth frame data, and compensating said twelfth frame data based on said compensation data to obtain said fourth frame data; and

simultaneously receiving said third frame data and said compensation data

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corresponding to said third frame data, and compensating said third frame data based on said compensation data to obtain said fifth frame data.

Claim 29 (currently amended) The method of claim 25, further comprising:
said step of transforming said sixth frame data and said seventh frame data into
5 one of said first frame data and said third frame data respectively and said third frame
data and said first frame data respectively is changed to a step of transforming said sixth
frame data and said seventh frame data to output the third frame data and a tenth frame
data, outputting one of said third frame data and said tenth frame data;

10 quantizing [[a]]said tenth frame data and said third frame data by using a
nonlinear quantization method to output said first frame data and an eleventh frame data
respectively;

wherein said step of outputting said fourth frame data and said fifth frame data is
performed by obtaining said compensation data in response to said tenth frame data,
said third frame data, and said eleventh frame data, and said second frame data
15 corresponding to said eleventh frame data;

20 ~~wherein said step of transforming a sixth frame data and a seventh frame data~~
~~into one of said first frame data and said third frame data respectively and said third~~
~~frame data and said first frame data respectively is changed to a step of transforming~~
~~said sixth frame data and said seventh frame data into one of said tenth frame data and~~
~~said third frame data respectively and said third frame data and said tenth frame data~~
~~respectively.~~

Claim 30. (original) The method of claim 29, wherein said step of outputting
said fourth frame data and said fifth frame data further comprises:

simultaneously receiving said eleventh frame data and said second frame data

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corresponding to said eleventh and comparing said eleventh frame data and said second frame data to generate said compensation data based on the difference between said eleventh frame data and said second frame data;

simultaneously receiving said tenth frame data and said compensation data
5 corresponding to said tenth frame data, and compensating said tenth frame data based on said compensation data to obtain said fourth frame data; and

simultaneously receiving said third frame data and said compensation data corresponding to said third frame data, and compensating said third frame data based on said compensation data to obtain said fifth frame data.

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